

APPENDIX I

NATIONAL HISTORIC ENGINEERING LANDMARK

Nomination Form

To: National Engineering Heritage Panel,
Institution of Engineers, Australia,
11 National Circuit,
Barton, A.C.T. 2600.

Date: May 30 1988

From: Graeme Quick

National Committee

on Agricultural

Engineering.

(name of Division or
Committee)

This is to nominate the following Work for designation as a National Historic Engineering Landmark:

(Name of Proposed Landmark) HOWARD'S ROTARY HOE

Located at HAWKESBURY AGRICULTURAL

COLLEGE State NSW Please furnish

the address (and map grid reference if a fixed Work)

The Work is owned by HAWKESBURY AGRICULTURAL COLLEGE

In support of this nomination the following information is provided:

1. Date of construction (or other significant date):

1922

2. Name of key professional personnel associated with the Landmark:

ARTHUR CLIFF HOWARD

3. National engineering historic significance of the Landmark:

HOWARD'S ROTAVATOR TRACTORS AND OTHER FARM MACHINERY HAVE
BEEN MADE ALL OVER THE WORLD AND CONTINUE TODAY.

4. Comparable or similar Works (a) In Australia. (b) Overseas.

OTHER MANUFACTURERS MAKE COPIES OR SIMILAR MACHINES OVERSEAS.

5. Unique features or characteristics which set this proposed Landmark apart from other engineering Works, including those in 4 above:

THE HOWARD ROTAVATOR WAS THE FIRST COMMERCIAL ROTARY CULTIVATOR

6. Contribution which this Work has made towards the development of:
(1) the engineering profession and/or (2) the nation:

INITIALLY HOWARD'S FARM EQUIPMENT PRODUCTION REQUIRED A LARGE FACTORY AT NORTHMEAD AND DEALERSHIPS ACROSS AUSTRALIA, THEN HE STARTED PRODUCTION OVERSEAS. HIS ROTAVATOR PRINCIPLES IS NOW USED WORLDWIDE, ESPECIALLY ON INTENSIVE CROPPING PROGRAMS. MILLIONS OF ROTAVATORS ARE IN USE IN THE THIRD WORLD.

7. In further support of this nomination the following documentation is submitted: (please list all enclosed documents, photographs, and supporting historical evidence).

SUPPORT FOR THE LOCATION OF THE PLAQUE AT THE COLLEGE IS PROVIDED IN THE ATTACHED LETTERS.

8. For completion by Committee or body (other than a Division)
making the Submission. A copy of this Submission has been forwarded
to the Secretary of the _____ Division at _____

We have discussed this nomination with the owner of the Work. The owner has indicated that _____

(include statement regarding owner's attitude).

THE ORIGINAL COMPANY NO LONGER EXISTS. MR. HOWARD'S SON, JOHN, IS BELIEVED TO BE IN THE UK. BUT HE HAS'NT RESPONDED TO MY INVITATION FOR HIM TO COMMENT AND TO UNVEIL THE PLAQUE. WE HAVE NOT DETERMINED WHETHER A.C. HOWARD WAS A MEMBER OF THE INSTITUTION, BUT IT IS HIGHLY UNLIKELY, SINCE HE WAS NOT AN ENGINEERING GRADUATE.

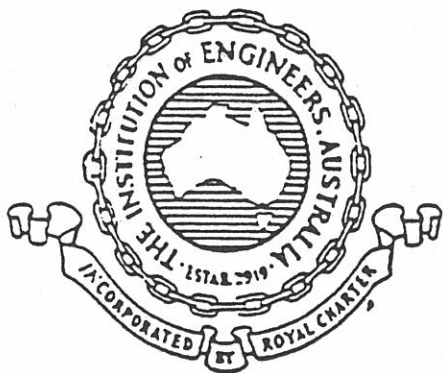
If this nomination is approved for designation as a National Historic Engineering Landmark by the Institution of Engineers, Australia, we understand that the Division or Committee will be expected to take a major responsibility in the development of a suitable presentation event at which the national plaque would be publicly presented.

Chairman of Nominating Body

Secretary of Nominating Body

This form may be reproduced either by electrostatic copying or by retyping. If possible, please submit eight (8) copies of all materials relating to the nomination. If more space is required to provide full response to any of the above, please attach additional pages.

NOTE: With enclosed additional documentation please also include 200 x 250 mm black and white photos which depict the work and can be used for publicity purposes. Also requested are 35 mm colour slides which can be used for a slide presentation.



HISTORIC ENGINEERING MARKER

HOWARD'S ROTARY HOE

ARTHUR CLIFFORD HOWARD (1893 - 1971) WAS FIRST TO ACHIEVE COMMERCIAL SUCCESS WITH THE IDEA OF USING A POWERED ROTOR TO CULTIVATE SOIL.

HOWARD BUILT HIS FIRST MACHINE IN 1912 AT THE GILGANDRA FAMILY FARM. HE MARKETING HIS FIRST ROTAVATOR IN 1922, AND ESTABLISHED FACTORIES IN NEW SOUTH WALES THEN OVERSEAS.

CLIFF HOWARD DEVELOPED TRACTORS, A CANE HARVESTER AND IMPLEMENTS IN A LONG AND PRODUCTIVE CAREER. HIS NAME ENDURES ON A RANGE OF MACHINES SOLD WORLDWIDE.

DEDICATED BY
THE INSTITUTION OF ENGINEERS, AUSTRALIA, 198 .

Office of the Principal

September 7, 1987

Dr G R Quick
Director of Agricultural Engineering
Agricultural Engineering Centre
Roy Watts Road
GLENFIELD 2167

Dear Graeme,

Thank you for your letter dated July 9 concerning the wish of the Institution of Engineers, Australia, to locate a bronze marker to commemorate Howards Rotary Hoe at the College. Please accept my apologies for the delay in replying to your letter.

The College will consider it an honour and a pleasure to have such a plaque located on our Campus. Thank you very much for choosing Hawkesbury for this honour.

I have a special, personal pleasure in this matter because I am a relative of the late Cliff Howard - he was my Mother's first cousin. My wife and I met Cliff and his wife and family in 1961 when we were returning from the United States via the United Kingdom after I had completed my Ph.D degree studies.

I have asked Harry Williams to prepare a detailed response to question (2) and (3) in your letter dated July 9. He will consult with our Bursar, Brian Lindsay, who is responsible for Works and Properties on the College and with our Publicity Officer Miss Fiona Childs.

We will write to you again when we have finalised all the information you require.

Once again, please accept my thanks, on behalf of the Institution of Engineers, for the honour you have paid Hawkesbury. Please do not hesitate to contact me if you require any further information.

Kind regards.

Yours sincerely,

A. Le Fèvre

for DR GRAHAM SWAIN
PRINCIPAL

HAWKESBURY
AGRICULTURAL
COLLEGE

SCHOOL OF
ADVANCED
EDUCATION

Reid 880122

Office of the Principal

January 13, 1988

Dr G.R. Quick
Director of Agricultural Engineering
Agricultural Engineering Centre
Roy Watts Road
GLENFIELD 2167

Dear Graeme,

Here are further details regarding the placement of a marker at the College to commemorate the historic significance of Howard's Rotary Hoe.

The group interested in the project propose that the marker be located within Stable Square. The Square has been developed as a focal point for student cultural and social activity and is the centre of College Historical interest for visitors and is recognised by the National Trust.

The site selected, on the lawn in the Southern Corner of the Square is adjacent to the area of the building dedicated as a museum which will house equipment associated with the early days of agricultural production.

The Student Union Council, who have responsibility for maintaining Stable Square, have approved the location of the marker at this site.

The proposed location is marked on the top left-hand photo in the attached Union brochure for your information.

Regarding the wording of the marker, a minor suggestion is shown on the attachment.

Yours sincerely,

A. Re Fennore

for DR GRAHAM SWAIN
PRINCIPAL

Attachments

cc Bursar, Publicity Officer, H. Williams

EXCERPT FROM
DIGGING STICK TO ROTARY HOE
CASSELL AUSTRALIA 1977

CHAPTER ELEVEN

The Rotary Hoe

Arthur Cliff Howard — development to world-wide importance — economic value to Australia

MILLED from hardwood and forged from sulky springs, the first rotor and blades for the Rotary Hoe were made by Cliff Howard on his father's farm at Gilgandra, N.S.W.. Sweat and toil in this little old workshop on the property, "Mountain View", introduced the first rotary hoe to the world in 1920 — the culmination of the inventor's ideas and experiments nearly 10 years before which had been interrupted by the First World War.

Arthur Cliff Howard was born in 1896 at Crookwell, N.S.W., where his family were farmers. He, his three brothers and two sisters received their schooling in the Moss Vale district. When his family took up another property in Gilgandra, Arthur Cliff Howard continued his schooling and engineering apprenticeship at Moss Vale. Wool, wheat and cypress timber were the main sources of income on his father's farm. Howard's father was a progressive farmer and, in 1912, he brought the first steam tractor to the district as a power source for hauling timber, ploughing and other farming activities. Young Arthur Cliff Howard (known to

THE ROTARY HOE

his family and friends as Cliff) was home on holidays when the tractor was first put to use.

Cliff Howard told me of the plans and ideas he had when he first saw the machine: "On closely watching it at work, I realised that much of the power of the engine was being wasted in pressing the ground solid enough to take the strain of pulling the plough. I felt that if the power of the engine were applied direct in rotary form to the work of ploughing or in some way tilling the soil, this power which was wasted by the wheels of the tractor would be converted into useful work." Howard, at the time, was serving an apprenticeship with an engineering works about 300 miles from the farm. He was also studying engineering by a correspondence course which occupied all his spare time. He was only able to get home for a week once a year and it was always a busy time on the farm and he could not carry out any experiments. On one visit in 1912 he was able to talk his father and brother into letting him test his idea by rigging a drive from the tractor engine to the shaft of a one-way disc cultivator, with the discs notched so they would grip the ground, using as transmission, gear chains, sprockets and cog wheels from a derelict reaper and binder and odd pieces borrowed from equipment around the farm.

The results of this test were not very reassuring. The disc cultivator, with the discs spun faster than normal, tended to cast the soil sideways far too much. It did overcome the wheel spin and soil packing and the way it enabled heavy weed growths to be cut through and mixed with the soil was



Arthur Cliff Howard, inventor of the Rotary Hoe at Gilgandra, N.S.W. in 1920

HOWARD'S ROTARY HOE

The hoe is currently stored in the Machinery Pool Shed of the University of Western Sydney -- Hawkesbury, Richmond, N.S.W.

It is a partial cutaway version, although still workable, that was presented to the then Hawkesbury Agricultural College by the Howard company.

The Historic Engineering Marker plaque is located on an exterior wall in the interior of the historic Stable Square, nearby on the same campus.

BR
16/6/94

